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## APPARATUS AND METHOD FOR PLAYING A VIDEO SLOT GAMING MACHINE HAVING A BONUS GAME

### BACKGROUND OF THE INVENTION

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#### 1. Field of the Invention

[0001] The present invention relates generally to video slot gaming machines and more particularly, to an apparatus and method for playing the video slot gaming machine having a bonus game and a readable recording medium recording a control program for playing a video slot gaming machine having a bonus game.

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#### 2. Description of the Prior Art

[0002] Gaming machines, such as slot machines, are a cornerstone of the gaming industry. Generally, the popularity of such machines with players is dependent on the perceived likelihood of winning money at the particular game and the intrinsic entertainment value of the game relative to other available gaming options. In addition, some players avoid slot machine games because such traditional slot games include multi-line pay-outs based on complex pay-lines which are difficult but important to understand in order to make an informed wager. Where the available gaming options include a number of competing games and the expectation of winning each game is believed to be generally the same, players are most likely to be attracted to the most entertaining and exciting games in which the results are easy to understand such that cognizable wagers may be placed. Thus, in many instances, gaming operators strive to employ the most entertaining, exciting and simple multi-line games available because such games attract frequent play by less experienced players and, hence, increase

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profitability to the operator. Traditionally, a multi-line video slot gaming machine includes a plurality of game elements, vertical spinning reels, complex multiple pay-lines and a controller for randomly aligning the pluralities of game elements on a display upon initiation of the game by a player. Generally, where the randomly aligned pluralities of symbols result in a winning combination of game elements stored in a pay-out table, the player receives a pay-out based on the wager placed by the player. Furthermore, one concept that has been successfully employed to enhance the entertainment value of the game is the addition of a bonus game which may be played in conjunction with the "primary" game. The bonus game may comprise any type of game, either similar to or completely different from the base game. The bonus game is initiated upon the occurrence of a selected event or outcome of the primary game.

[0003] Such video slot gaming machine concepts are the subject of U.S. Patent 6,231,442, issued May 15, 2001 in the name of Mayeroff and U.S. Patent 6,234,897, issued May 22, 2001 in the name of Frohm, et al. . The '442 and '897 patents disclose an embodiment wherein the base game is a slot machine game implemented on a video display. The '442 patent discloses a primary game and a bonus game comprising a selection game. Whenever the player achieves a combination of symbols on the main game, the player is awarded with the opportunity to play the secondary event selection game wherein the player is provided with multiple items having a mystery multiplier which is then applied to the wager bet by the player. The '897 patent discloses a primary game and a variable bonus pay-out game wherein the expected values of the bonus game

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are based on different arrangements of the start-bonus symbols resulting from the primary game.

[0004] Because the excitement and entertainment value of the primary game provides increased player appeal relative to other gaming machines and the bonus game concept increases player appeal and excitement, thereby increasing the chance to win and the potential pay-out amount, there is a continuing need to develop new features for primary and bonus games. New features are necessary to appeal to player interest and enhance excitement in order to entice longer play and satisfy demands of operators for interesting games and increased profitability. The present invention is directed to satisfying these needs.

#### SUMMARY OF THE INVENTION AND ADVANTAGES

[0005] It is an object of the present invention to provide a slot machine providing more excitement, higher entertainment value and paylines that are easy to understand, thereby attracting increased numbers of patrons to play and enticing them to play longer.

[0006] The video slot gaming machine of the present invention provides a slot machine comprising a housing having an operation panel on a front side, a main display device, an input device capable of issuing information corresponding to an operation of a player, and a game controller for controlling a process of a game performed on a screen of the main display based on the information received from the input device.

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[0007] The video slot gaming machine of the present invention includes a housing having a display device for displaying a plurality of game elements in a grid. The grid includes a plurality of cells, wherein the cells represent a plurality of horizontal reels. The machine further includes a memory device for storing a pay-table; and a game controller coupled to the display device and the memory device. The game controller randomly selects the game elements to be displayed in the display device and determines an outcome based on the displayed game elements, a pay-table, predetermined vertical pay-lines, and a wager made by a player playing the gaming machine.

[0008] In another embodiment, the video slot gaming machine includes a housing having a display device for displaying game elements in a grid having a plurality of cells. The machine further includes a memory device for storing a pay-table and, a game controller coupled to the display device and the memory device. The game controller randomly selects the game elements to be displayed in the display device from a set of possible game elements and determines an outcome based on the displayed game elements, a pay-table, and predetermined pay-lines. The game controller is further adapted to animate the display device to represent the sliding of horizontal reels and randomly select a game element for each cell. The set of possible game elements includes gems and symbols representing the legs, torso and arms, and head of first, second, and third characters, including characters having different shapes and colors.

[0009] In yet another embodiment of the present invention, the video slot gaming machine includes a housing having a display device for displaying game elements in a grid having a plurality of cells. The machine further includes a memory device for

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storing a pay-table and a game controller coupled to the display device and the memory device. The game controller randomly selects the game elements to be displayed in the display device from a set of possible game elements and determines an outcome based on the displayed game elements, a pay-table, and predetermined pay-lines, the set of possible game elements includes character game elements which comprise an aggregate symbol. The game controller is adapted to activate a bonus game in response to the plurality of character game elements being located along one of the paylines. The bonus game may be a sport such as gymnastics, diving or basketball. In yet another embodiment of the present invention, the game controller is adapted to activate a bonus game in response to detecting a triggering event and to determine an outcome of the bonus game, wherein the outcome of the bonus game is determined as a function of the triggering event and first and second random factors. The triggering event is a plurality of character game elements which comprise an aggregate symbol being located along one of the paylines.

#### BRIEF DESCRIPTION OF THE DRAWINGS

[0010] Other advantages of the present invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:

[0011] Figure 1 is a perspective view showing an embodiment of a slot machine to which the present invention is applied;

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[0012] Figure 2 is a block diagram illustrating a schematic configuration of a control system of the slot machine illustrated in Fig. 1;

[0013] Figure 3 is a display of a first and second plurality of game elements in a first display during a normal random display having a winning combination appearing within the first display;

[0014] Figure 4 is similar to Figure 2 but showing a first symbol united and moving;

[0015] Figure 5 is a display of a plurality of bonus games in the second display of Figure 1;

10 [0016] Figure 6 is a display of the first symbol performing one of the bonus games of Figure 5;

[0017] Figure 7 is a display of the first symbol performing one of the bonus games of Figure 5;

15 [0018] Figure 8 is a display of the plurality of bonus outcomes of the video slot machine of Figure 1 including a crowd meter and a plurality of ratings generated by a plurality of judges;

[0019] Figure 9 is a display of a total bonus factor for determining a payout sum to be distributed to a player;

20 [0020] Figure 10 is a flow diagram of a method for playing the video slot machine of Figure 1, according to a first aspect of the present invention;

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[0021] Figure 11 is a flow diagram of a method for playing the video slot machine of Figure 1, according to a first aspect of the present invention; and,

[0022] Figure 12 is a flow diagram of a method for playing the video slot machine of Figure 1, according to a first aspect of the present invention.

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### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0023] With reference to the drawings and in operation, the present invention provides a video slot gaming machine **10**. With reference to Figure 1, an exemplary video gaming machine **10** is illustrated into which the present invention can be incorporated to improve the enjoyment of a video game and to thereby increase the amount of time that the video game is played by patrons of a gaming establishment. Figure 1 shows a general appearance of the video gaming machine **10** to which the present invention is applied. As shown in the Figure 1, the machine **10** comprises a housing **2** standing upright. The housing **2** comprises a main body **3**, a top box **4** mounted on a top portion of the main body **3** and a door **5** attached to a front side of the main body **3** so as to be swingable between an open position and a close position.

[0024] At a center portion of the front side of the main body **3**, there is mounted a main display device **14** comprising a CRT, and below the display **14** is provided an operation panel **8**. The operation panel **8** is attached to the door **5** so as to slope down in a forward direction of the machine **10**. Below the operation panel **8** and on a front side of the top box **4**, there are provided decoration panels **9a** and **9b** on which

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pictures, letters and the like representing a title of the machine **10** or the like are illustrated.

[0025] As shown in Figure 1, the operation panel **8** is provided, from a right end toward a left end thereof, with an insertion portion **11**, and an input portion **17**.

5 Note that the word coins includes coins or tokens.

[0026] In the exemplary input portion **17** shown, four push button switches **25, 27, 29, 31** are provided as first input devices, each of which is capable of being depressed. The push button switches **25, 27, 29, 31** are selected as switches to be operated with particular high frequency during the game, so that theses switches are provided on the operation panel **8**. For example, the push button switch **29** at a lower left position of the four switches is operated for starting the game. The number of the push buttons provided at the input portion **17** and functions assigned to the push buttons can be properly changed.

[0027] Figure 2 is a block diagram illustrating a schematic configuration of a control system or game controller **12** provided in the machine **10**. The game controller **12** includes a central processing unit (CPU) **51**, a coin-bill management device **53**, a display processor **16**, a RAM **55** as a memory device and a ROM or EPROM **57**. The CPU **51** is mainly composed of a microprocessor unit and performs various calculations and motion control necessary for the progress of the game.

20 [0028] The coin-bill management device **53** detects the insertion of a coin or token or bill from the coin insertion portion **15** and the bill insertion portion **21**, and



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performs a necessary process for managing the coin or bill. For example, the device **53** judges whether the medal and the slip are real or counterfeit, and keeps the medal and the slip judged as real while rejecting the medal and the slip judged as counterfeit. The display processor **16** interpret commands issued from the CPU **51** and displays desirable images on the display **14**. The RAM **55** temporarily stores programs and data necessary for the progress of the game, and the ROM **57** stores, in advance, programs and data, e.g., the paytables, for controlling basic operation of the machine **10**, such as the booting operation thereof and the game code and graphics.

[0029] The video gaming machine **10** of Figure 1 further includes the display **14**, which, in one embodiment described herein, is advantageously a conventional VGA display monitor.

[0030] As will be discussed below, the VGA display displays a simulation of a slot game, or other game of chance, and a player using the video gaming machine **10** interacts with the simulated game.

[0031] With reference to Figures 2 and 3, the CPU **51** is electrically connected with a coordinate readout device **59** as well as the above mentioned push button switches **25, 27, 29, 31**. The coordinate readout device **59** works as a second input device and comprises, for example, a so-called touch panel **44** formed as a transparent panel and is capable of issuing signals corresponding to the coordinates of a position touched by the player. The coordinate readout device **59** is closely put on the surface of the display **14**.

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[0032] With reference to Figure 3, the touch panel **44** provides a plurality of touch surfaces or buttons on the display device **14**, which when touched by the player serves as input devices to the game controller **51**. In the illustrated embodiment, the touch panel **44** provides a cash out button **41**, a help button **47**, a pay table button **66**, a select lines button **60** and a bet per line button **61**. Actuation or touching of the cash out button **41** distributes any accumulated credits to the player. Actuation of the help button **47** displays instructions for the game.

[0033] Actuation of the pay table button **66** displays the pay table for the game. Actuation of the select lines button **60** allows the player to toggle through the available sets of paylines. Preferably, the video slot gaming machine **10** is a multi-line game. The select lines button **60** allows the player to select the lines on which the player desires to bet.

[0034] The bet per line button **61** allows the player to toggle to increase the bet per line a credit at a time (up to the maximum bet).

[0035] The display **14** also includes a number of meters which display information to the player. A paid meter **43** keeps track of the total amount of winnings paid out to the player per play. A won meter **45** is displayed for informing the player of the number of winning credits accumulated per play. A total bet meter **48** displays the player's current bet (number of paylines selected x bet per line). A credit meter **49** indicates the player's available number of credits.

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[0036] A random number generator **32** generates random numbers used for randomly selecting elements during game play, as described below.

[0037] With reference to Figures 1 and 2, the game controller **51** sends a signal to a display processor **16** for displaying a plurality of game elements **70** on the display **14**.

[0038] Returning to Figure 2, the game controller **12** is adapted to awarding a regular payout in response to the game elements **70** displayed on the display **14** matching a winning combination along one of the paylines selected by the player.

[0039] The game controller **12** also activates a bonus game a described below. The regular payout may vary for the amount of credits wagered according to a regular payout table (not shown).

[0040] Referring to Figs. 1 through 3, the display device **14** displays a plurality of game elements **70** in a grid **72** having a plurality of cells **74**. The cells **74** represent a plurality of horizontal reels **94A**, **94B**, **94C**. A memory device **76** (comprising the RAM **55** and the ROM **57**) stores a pay-table. The game controller **12** is coupled to the display device **14** and the memory device **76** and is adapted to randomly select the game elements **70** to be displayed in the display device **14**. The game controller **12** is also adapted to determine an outcome based on the displayed game elements, a pay-table, and predetermined vertical pay-lines.

[0041] In one embodiment of the video slot gaming machine **10** of the present invention, the game controller **12** animates the display device **14** so as to depict

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horizontal sliding reels **94A,94B,94C**, preferably, with the look and feel of a conveyer belt.

[0042] Moreover, in one embodiment, the game controller **12** is adapted to randomly select a game element **70** for each cell **74** while still appearing to the player  
5 to be sliding into position in the cells **74**.

[0043] In another embodiment, the memory device **76** is adapted to store a plurality of arrays of game elements **18**. Each array corresponds to a horizontal reel **94A, 94B, 94C**. The game controller **12** is further adapted to select a stopping position for each array on the corresponding horizontal reel **94A,94B,94C**. More specifically, the  
10 plurality of game elements **70** are disposed in a predetermined order in the array and the array appears to enter the display **12** from one side and slide into position in the grid **72** while providing a braking sound when coming to a stop in the cells **74**.

[0044] In one embodiment, the set of possible game elements includes gems and symbols representing the legs, torso and arms, and head of first, second, and  
15 third characters. Preferably, the first, second, and third characters have different shapes and colors.

[0045] With reference to Figures 3 and 10, the operation of a video gaming machine **10** in accordance with a first embodiment of the present invention will now be described. In a first block **100**, a plurality of game elements **70** are displayed in  
20 a grid **72** having a plurality of cells **74**. The cells **74** represent horizontal reels. In a second block **102**, a pay-table is stored in a memory device **76**. In a third block **104**, the

game elements **70** to be displayed in the display device **14** are randomly selected. In a fourth block **105**, an outcome based on the displayed game elements, a pay-table, predetermined vertical pay-lines, and a wager made by the player is determined. Each column of the grid **72** defines a vertical payline.

5           **[0046]**           With reference to Figures 3-9, in another aspect of the present invention, the video gaming machine **10** implements a bonus game **86** in response to a triggering event.

10           **[0047]**           The set of possible game elements **18** includes a plurality of character game elements which comprise an aggregate symbol or character **84**. In the preferred embodiment, the aggregate symbol **84** is one of the first, second, and third characters, which are composed of the head, arms and torso, and leg symbols **78, 80, 82**. The triggering event is defined as the presence of the character game elements **78, 80, 82** in a payline. For example, as shown in Figure 3, the character game elements **78, 80, 82** are all located in the leftmost payline Line 1.

15           **[0048]**           In the preferred embodiment, after the game controller **12** identifies the triggering event (and stops the reels **94A, 94B, 94C**), the game controller **12** displays an animation of the aggregate symbol or character **84** uniting from the character game elements **78, 80, 82** and traversing across the display **14** (as shown in the dotted lines on Figure 4) in a character dance.

20           **[0049]**           In one embodiment, the bonus game **86** is depicted as a sporting event. In the preferred embodiment, the player is given the option of choosing a sport,

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such as gymnastics, diving or basketball. With reference to Figure 5, upon activation of the bonus game, the player is given an option of choosing gymnastics, diving, or basketball through a touch screen gymnastics button **58A**, a touch screen diving button **58B**, and a touch screen basketball button **58C**. A representative gymnastics and diving event are illustrated in Figures 6 and 7, respectively.

[0050] Preferably, the outcome of the bonus game is determined as a function of the triggering event and first and second random factors. The game controller **12** is adapted to determine the outcome of the bonus game **86** and to display an animation of the selected event. The animation is representative of the outcome.

10 [0051] As discussed above, the triggering event is the appearance of the character game elements **78, 80, 82** of the first, second or third characters **84** appearing in a pay line. Each of the first, second and third characters **84** is assigned a value, e.g., 1, 2, or 3, which is used to determine the outcome of the bonus game **38** (see below).

15 [0052] In one embodiment, the first random factor is a random number from 1 to 10. Preferably, the first random factor is represented by the reaction, i.e., applause, of a crowd **92** (see Figures 6 and 7). Preferably, during the animation of the selected event, the crowd's **92** reaction is illustrated.

[0053] In one embodiment, the second random factor is a random number from 1 to 10. Preferably, the second random factor is represented as the scores of three judges **90**.

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[0054] In the preferred embodiment, after the bonus game is triggered, the game controller 12 randomly selects a general outcome of the event: good, fair, or bad. For each general outcome, each judge's 90 score is a random number between a given range. For example, for a general outcome of good, each judge's 90 score is a random number between 7-10; for a general outcome of fair, each judge's 90 score is a random number between 4-6; and for a general outcome of bad, each judges 90 score is a random number between 1-3. Alternatively, these outcomes may be weighted to traditional desired mathematical probabilities.

[0055] Additionally, the animation of the event is preferably, representative of the general outcome. However, the first factor, i.e., applause, is independent of the general outcome.

[0056] With reference to Figures 8 and 9, the outcome of the bonus game 86 is the value associated with the first, second and third characters (1, 2 or 3) multiplied by the first and second random factors multiplied by the players wager (line bet). For example, as shown, the character has a value of 3, which is multiplied by the applause factor of 2, which is multiplied by the sum of the judges scores, i.e.,  $3 \times 2 \times (2 + 2+3) = 42$ .

[0057] With reference to Figure 11, the operation of a video gaming machine 10 in accordance with a second aspect of the present invention will now be described. In a first block 106, a plurality of game elements 70 are displayed in a grid 72 having a plurality of cells 76. In a second block 108, a pay-table is stored in the memory

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device 76. In a third block 109, the game elements 70 to be displayed in the display device 14 are randomly selected from a set of possible game elements. In a fourth block 110, an outcome is determined based on the displayed game elements, a pay-table, predetermined pay-lines, and a wager made by the player. The set of possible game elements 70 includes a plurality of character game elements which comprise an aggregate symbol. In a fifth block 111 a bonus game is activated in response to the plurality of character game elements being located along one of the paylines.

[0058] With reference to Figure 12, the operation of a video gaming machine 10 in accordance with a third aspect of the present invention will now be described. In first block 112, a plurality of game elements are displayed in a grid 72 having a plurality of cells 74. In a second block 114, a pay-table is stored in a memory device 76. In a third block 116, the game elements to be displayed in the display device 14 are randomly selected from a set of possible game elements and an outcome is determined based on the displayed game elements, a pay-table, predetermined pay-lines, and a wager made by the player. In a fourth block 118, a triggering event is detected. In a fifth block 120, an outcome of the bonus game is determined. The outcome of the bonus game is determined as a function of the triggering event and first and second random factors.

[0059] It should be noted that although the present invention has been described above as being embodied in a stand-alone video slot game, the present invention may also be embodied in a piece of software for play on a stand-alone computer



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such as a personal computer. The present invention may also be provided in play over a computer network such as the internet.

[0060] Other aspects, objects and advantages of this invention can be obtained from a study of the drawings, the disclosure and the appended claims.

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